

The claims defining the invention are as follows.

1. A solar still comprising a hollow, porous absorber body,
body positioning means to expose the absorber body to solar radiation,
feed means to introduce feed liquid into the absorber body,
5 condenser means, of non-porous material that is substantially transparent to solar
radiation, substantially enveloping the absorber body,
flow control means to regulate the rate of flow of feed liquid into the absorber body,
and
harvesting means for the removal of distillate from the condenser means.
- 10 2. A solar still according to claim 1 wherein the absorber body comprises at
least one rigid, porous tube of darkly coloured, sintered ceramic material, having
two ends, and
said porous tube is open at one end to receive feed liquid and is closed at its other
end to prevent flow of feed liquid therefrom.
- 15 3. A solar still according to claim 2 wherein said condenser means comprises at
least one non-porous tube through which the at least one porous tube extends
without making contact therewith,
and wherein the non-porous tube is of material that is substantially transparent to
solar radiation.
- 20 4. A passive still according to claim 3 wherein there are a plurality of said
porous tubes and a like plurality of said non-porous tubes respectively associated
with the porous tubes in a substantially planar array wherein the porous tubes are
parallel and spaced apart.
- 25 5. A passive still according to claim 4 wherein said body positioning means
ensure that the array is inclined to the horizontal at an angle of inclination to suit the
geographic location of the still so as to maximise the exposure of the tube array to
solar radiation.
- 30 6. A passive still according to claim 5 wherein said feed means comprise a feed
pipe extending from a source of feed liquid to a header to which each of said porous
tubes are connected,

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and wherein said flow control means comprise a valve in said feed pipe upstream of said header.

7. A passive still according to claim 5 wherein said harvesting means comprise an outlet spout adjacent a lower end of each said non-porous pipe and a collector gutter to receive distillate from those spouts.

8. A passive still according to claim 6 wherein said flow control means further comprise a thermometric element in thermal transmission relationship with feed liquid in one of said porous tubes and an electronic control unit responsive to signals from said thermometric element that operates said valve to achieve an operating temperature no greater than 100 °C.

9. An active still according to claim 3 further comprising reflecting means to concentrate solar radiation onto said porous tube and tracking means to cause said reflecting means to track the sun.

10. An active still according to claim 9 wherein said reflecting means include a parabolic trough reflector having a focal line and a parabolic axis, and wherein said body positioning means ensure that the at least one porous tube is substantially coaxial with said focal line, and wherein said tracking means ensure that said parabolic axis remains substantially directed towards the sun when the still is producing distillate.

11. An active still according to claim 10 wherein said body positioning means comprise a stationary base, a turntable supported by said base for rotation about a substantially vertical axis and two spaced apart pillars extending upwardly from said turntable, and wherein said porous tube and said non-porous tube extend between said pillars and are fixedly supported thereby, and wherein said reflector extends between said pillars and is rotatably supported thereby, and wherein the axis of rotation of the turntable intersects the axis of the porous tube and said focal line.

12. An active still according to claim 11 wherein said tracking means comprise a first motor drive connected to said reflector to effect rotation thereof about its focal line, a second motor drive connected to said turn-table to effect rotation thereof about its axis of rotation, and an electronic control unit responsive to signals from
5 an array of photo-detectors that moves as one with the reflector,
and wherein the photo-detectors have respective discrete fields of view of the sky.
13. An active still according to claim 12 wherein the array of photo-detectors is symmetrical about a central axis of the array that is parallel to the parabolic axis of the reflector,
10 and wherein all of the detectors are lit by the sun when, and only when, the parabolic axis is directed at the sun.
14. An active still according to claim 13 such that if and when all of the detectors are unlit the control unit de-energises both said motors to halt the reflector until such time as at least one detector is re-lit.
- 15 15. An active still according to claim 13 such that if and when all of the detectors are unlit the control unit operates said motors so as to park the reflector in a pre-determined position, and then de-energises both said motors until such time as at least one detector is re-lit.
- 20 16. An active still according to claim 3 wherein said feed means comprise a feed pipe extending from a source of feed liquid to the open end of said porous tube, and wherein said flow control means comprise a valve in said feed pipe upstream of said open end.
- 25 17. An active still according to claim 16 wherein said flow control means further comprise a thermometric element in thermal transmission relationship with feed liquid in said porous tube and an electronic control unit responsive to signals from said thermometric element that operates said valve to achieve a maximum operating temperature no greater than 100 °C.
- 30 18. An active still according to claim 3 further comprising a catchment gutter extending within and lengthwise of the non-porous tube underneath the porous tube and discharging to waste, said catchment gutter being adapted to catch any un-

evaporated feed water dripping from the porous tube wall, including feed water fed into the porous tube during the night for flushing purposes

19. A method of distilling a feed liquid to produce a desired distillate comprising the steps of maintaining a flow of feed liquid into a porous, hollow absorber body, exposing the absorber body to solar radiation, and condensing resultant vapour arising from the absorber body.

20. A method according to claim 19 wherein said feed liquid is contaminated water and said distillate is potable water.